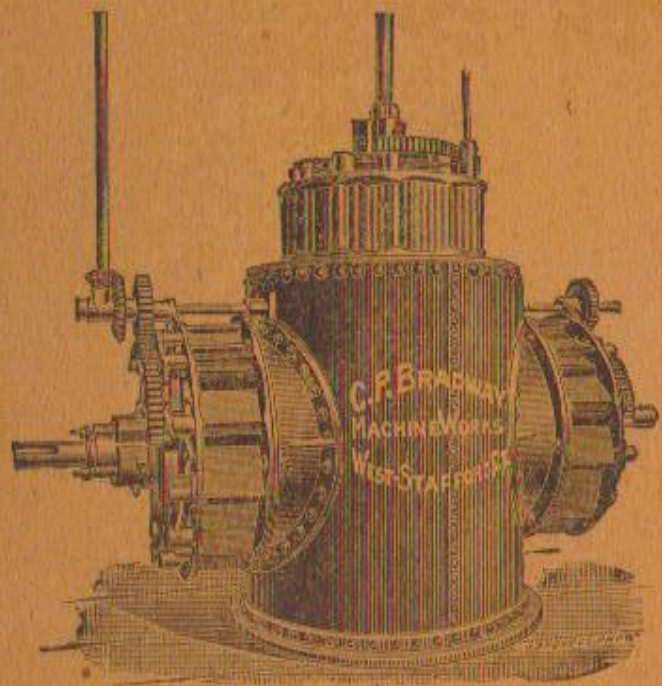


The C. P. BRADWAY

❖ PATENT TURBINE ❖

WATER WHEEL.

Built on Scientific Principles, and warranted
to give more power with a variable supply of
water than any other Turbine Wheel.



Water Wheels, Water Wheel Regulators,
IRON AND STEEL PENSTOCKS,
ADAPTED TO ALL PLACES AND CONDITIONS.

THE C. P. BRADWAY MACHINE WORKS,
WEST STAFFORD, CONN.

CATALOGUE

OF THE



C. P.
Bradway
Machine Works,



WEST STAFFORD,

~ CONN. ~

Press of C. B. FISKE & CO.
PALMER, MASS.

THE FOLLOWING IS TAKEN IN PART FROM STAFFORD ILLUSTRATED, PUBLISHED IN 1895.

Bradway's Turbine Water Wheels and Water Motors are among the most notable products of Stafford ingenuity and enterprise. C. P. Bradway, the inventor and maker of these valuable devices for utilizing water power, was born in South Glastonbury, Conn., May 23d, 1843. When only nine years old he began experimenting on water wheels, using the wheel which he constructed to run a small trip hammer. A year or two later he built one on a larger scale, which was made serviceable in the preparation of wood for the manufacture of gun powder.

At the age of fifteen he remodeled the Boyden Wheel, converting it into a flume wheel, and in his eighteenth year built a wheel of a construction which afterwards became very popular. A few of these wheels were manufactured and placed upon the market. But the foundry burned where his patterns were stored. Mr. Bradway went West, where he remained for fifteen years. On his return East he found in common use almost the identical wheel which he had invented, and up to the present time, 1897, a large portion of the water wheel manufacturers are building wheels constructed on the same principle, with the runner combining the central and downward discharge, and most of them using the same gate device which was used by Mr. Bradway in 1861, viz. a cylinder or hoop gate. When he returned East and discovered the success of the water wheel which was properly his invention, he turned his attention to the construction of a gate to control the water in a turbine wheel. After experimenting with almost every conceivable device, the most of which are at present in use on the various turbines manufactured in various parts of the country, he discovered the gate principle which he now applies to all his first-class wheels, and it is through the use of this gate system, combined with a properly constructed wheel bucket, that the Bradway wheel has become so popular among all classes of manufacturers and users of water wheels.

Water,

Whether as a solid or liquid or gas, is one of the most wonderful substances in nature. At all temperatures above 32° the motion of heat is sufficient to keep its molecules from rigid union. But at 32° the motion becomes so reduced that the atoms seize upon each other and aggregate to a solid. Water is composed by a chemical union of Oxygen and Hydrogen in the following proportions:

By weight, Oxygen 88.9 parts, Hydrogen 11.1 parts.

By volume, Oxygen 1., Hydrogen 2.

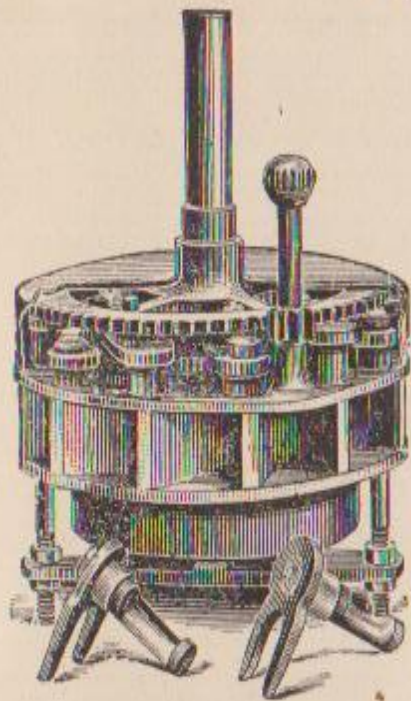
Liquids transmit pressure in all directions unchanged and without loss of power. This equality of pressure is their most characteristic property. Water is compressible at the rate of about $\frac{1}{21740}$ or about $\frac{1}{100}$ of an inch in 18 1-10 feet by each atmosphere or pressure of 15 lbs. per square inch. When the pressure is removed its elasticity restores its original bulk. A pressure of 1500 lbs. per square inch is required to reduce water 1-24 of its volume. Water at 39.1° is taken as the unit of weight upon which the specific gravity of other substances is based. A United States standard gallon of water at 39.1° of heat weighs 8.34 pounds and is equal to 231 cubic inches. A cubic foot contains 7.48 gallons and weighs 998 ounces or 62.38 pounds, and is 828 times heavier than atmospheric air. For ease of calculation its weight is taken as 1000 ounces or 62.5 pounds. Water at 1000 ounces is assumed as unity in the comparison of gravity of different substances. Water has a greater capacity for heat than any other known substance. It evaporates at all temperatures, consequently its value as an agent in the use of the steam engine. Twenty volumes of water absorb one volume of air under atmospheric pressure. The ratio of fresh water and salt water is as 35 to 36 by weight.

water under a given head. Indicated is the full capacity of water in its application to a wheel without deductions for friction and loss. Actual is the power which may be obtained from the wheel as applied to driving machinery or as tested by the application of a dynamometer.

The horse power of water wheels is usually based upon the full power of the water under a given head, and deducting a certain percentage for loss by friction and leakage. Some wheel men rate the power of their wheels at the full value of the water under a given head and leave it to their patrons to make such deductions as they deem proper to allow for friction and loss. Power tables arranged in this way are misleading, and parties contemplating the purchase of wheels should be careful to ascertain whether the tables of the wheel they contemplate placing are nominal or actual.



The C. P. Bradway Water Wheel Gates.



The peculiar construction of the C. P. Bradway Water Wheel Gate or Gates is such that the water supply is regulated in a Turbine Wheel with the nicety of the cut-off in the Corliss Steam Engine. The wheel will run up to speed with one-third of the water applied, and no water can enter the wheel without exerting its full force upon the wheel. The gates open in sections of three, four or six at a time; usually four gates are actuated at a time. Thus when four gates are open full width, eight or twelve remaining gates may be entirely closed, thus letting one-fourth or one-third gate onto the wheel and at the same time using full gates the full depth of the wheel-buckets. Thus the wheel will run up to speed with only one-fourth the gate and do a fair business with an amount of water hardly sufficient to start a Turbine with a differently constructed gate. To increase the power to any required power it is only necessary to turn the hand wheel until the desired amount of power is obtained.

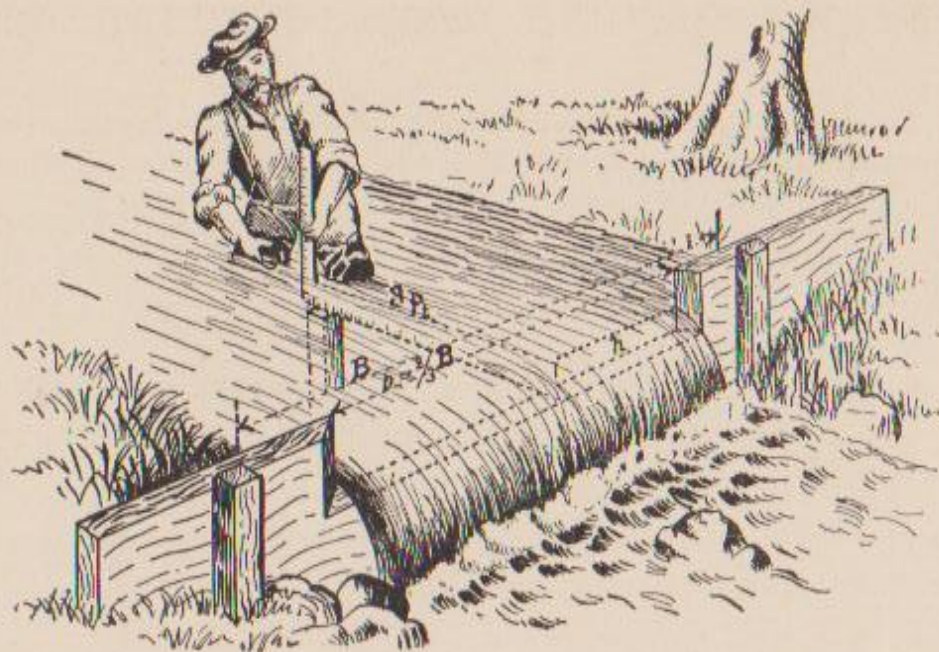
Thus continuing to open the gates in sections and practically using the full gate principle at all stages of the gate opening. This system of gates, combined with the peculiar construction of the Bradway Water Wheel bucket, enables the Bradway Wheel to successfully compete with any and all different forms and makes of wheels, and to replace any others with an assurance of better results. In numerous cases where water wheels have been used in connection with steam engines by the use of the Bradway Wheel, the parties have been able to run continuously by water alone.

The Bradway Wheel is built to suit all requirements, and can be adapted to any place where a water wheel can be used, it being built to run on either a vertical or horizontal shaft, using either one, two or three wheels on one base. They can be used anywhere between head and fall by using a draft tube. Can be placed in an engine room and run side by side with a steam engine without wetting the floor if desired.

Mr. Bradway has placed wheels as far as 23 feet above the water in the tail race with good results, but usually recommends the draft tube shorter where the conditions are favorable.

Improving a Water Power.

The first thing necessary is to know the amount of head and fall that can be obtained, viz.: The distance in feet, in a vertical line from the top of the water as it stands in the pond or forebay to the top of water as it stands in the tail race. This ascertained, the next thing is to find as near as possible, the amount of water your stream will average to supply; this can be obtained by building a weir dam, which may be constructed of a plank long enough to reach across the stream, cut a notch in the middle of sufficient width and deep enough to pass the water, place the plank in position and make tight at the bottom and at each end. (See cut of Weir Dam.) Drive a stake some three or four feet up stream, the top of which must be on a level with the bottom of the notch in the plank. When the water has risen to its full height, or as high as it will rise, take the measurement from the top of the stake to the top of water, then refer to the following weir table for weir measurement.



EXPLANATION OF WEIR TABLE.

The first vertical line represents the number of inches in depth the water runs over the weir. The following columns are fractional parts of inches and to obtain the full amount of water passing the weir, multiply the number of cubic feet as ascertained from this table by the number of inches in width of the notch through which the water passes, and this will give you the number of cubic feet per minute which your stream affords. In order to obtain a satisfactory estimate, the stream should be measured at different times, so as to obtain a fair average of the water supply.

The measurement of water by weir is mainly necessary when parties are contemplating the construction of a new plant, in making estimates for the necessary power, and considering the advisability of developing a water power.

Weir Table. 1 to 25 inches.

Inch.	$\frac{1}{8}$ inch.	$\frac{1}{4}$ inch.	$\frac{3}{8}$ inch.	$\frac{1}{2}$ inch.	$\frac{5}{8}$ inch.	$\frac{3}{4}$ inch.	$\frac{7}{8}$ inch.
1	.40	.47	.55	.65	.74	.83	.93
2	1.14	1.24	1.36	1.47	1.59	1.71	1.83
3	2.09	2.23	2.36	2.50	2.63	2.78	2.92
4	3.22	3.37	3.52	3.63	3.83	3.99	4.16
5	4.50	4.67	4.84	5.01	5.18	5.36	5.54
6	5.90	6.09	6.28	6.47	6.65	6.85	7.05
7	7.44	7.64	7.84	8.05	8.25	8.45	8.66
8	9.10	9.31	9.52	9.74	9.96	10.18	10.40
9	10.86	11.08	11.31	11.54	11.77	12.00	12.23
10	12.71	13.95	13.19	13.43	13.67	13.93	14.16
11	14.67	14.92	15.18	15.43	15.67	15.96	16.20
12	16.73	16.99	17.26	17.52	17.78	18.05	18.32
13	18.87	19.14	19.42	19.69	19.97	20.24	20.52
14	21.09	21.37	21.65	21.94	22.22	22.51	22.79
15	23.38	23.67	23.97	24.26	24.56	24.86	25.16
16	25.76	26.06	26.36	26.66	26.97	27.27	27.58
17	28.20	28.51	28.82	29.14	29.45	29.76	30.08
18	30.70	31.02	31.34	31.66	31.98	32.31	32.63
19	33.29	33.61	33.94	34.27	34.60	34.94	35.27
20	35.94	36.27	36.60	36.94	37.28	37.62	37.96
21	38.65	39.00	39.34	39.69	40.04	40.39	40.73
22	41.43	41.78	42.13	42.49	42.84	43.20	43.56
23	44.28	44.64	45.00	45.38	45.71	46.08	46.43
24	47.18	47.55	47.91	48.28	48.65	49.02	49.39

C. P. BRADWAY MACHINE WORKS, WEST STAFFORD, CT.

In supplying wheels for a plant which is already established Mr. Bradway seldom measures a stream, but endeavors to ascertain the maximum power wanted, and constructs a wheel to do the work required, which in some cases is many times larger than the natural supply of the stream.

This plan is only applicable to the C. P. Bradway Wheel. As wheels are usually constructed they would be utterly useless under these conditions.

Forebay and Rack.

All kinds of water wheels require a rack to keep drift wood and rubbish from entering the wheels. In order to have the rack a success the spaces between the bars should be much closer together than the bucket opening in the wheel which it is designed to protect. The rack surface should be large, so as to provide plenty of room for the water to pass to the wheel without loss of head. The spaces between the bars should be from $\frac{3}{8}$ of an inch in the smaller sizes to 1 inch in the larger sizes. The best way to make the rack is of flat iron 3-16 inch to $\frac{1}{4}$ inch in thickness by $1\frac{1}{4}$ inch to $1\frac{3}{4}$ inches in width. Holes large enough to receive a $\frac{3}{8}$ inch rod for the small racks or $\frac{1}{2}$ inch for a large rack should be drilled or punched near each end and at intervals of from $1\frac{1}{2}$ feet to 2 feet apart between. When putting the rack together, run the rods through one of the bars; then put on washers of the thickness required for the space between the bars. Then place another bar in position and another set of washers, and so on until the rack is completed. After the bars are all strung on, nuts should be placed on the end of the rods and drawn up. A rack made in this way, of sufficient size to pass a suitable quantity of water, and put in so no rubbish or obstruction can get around

the sides or over the top or under the bottom, will effectually prevent any damage to the wheel from obstructions or loss of power from the wheels getting filled up with rubbish. The rack is a very important feature and one most commonly neglected, and perhaps more trouble is caused from this source than from any other in the use of Turbine wheels. We are prepared to furnish parties using wheels with racks suitable for any Turbine wheel.

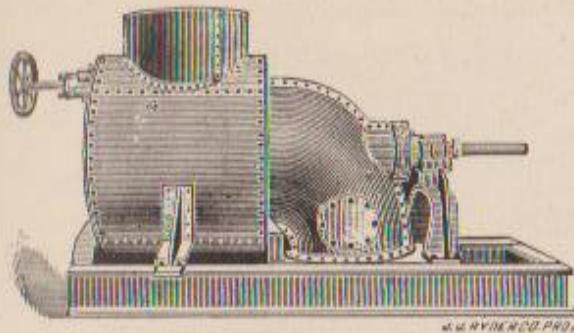
It used to be considered necessary to build a mill directly at the dam and have the water conducted to the wheel in an open flume. But the same result may be obtained by conducting the water through a proper sized pipe to the wheel, and at present it is a very common practice not to use any wood flume or forebay at all, but to extend a steel tube from wheel through the dam. When placed in this way it is necessary to have some kind of framework built around the end of tube and several feet away from the entrance to tube to support the rack. This way of placing wheels is becoming very popular, and when connected with a steel flume, with wheel enclosed in this steel casing, makes a very substantial job and one not liable to get out of order.

Feed Pipes for Supplying Wheels

Should be constructed of large areas in proportion to the amount of water used on a turbine, so as to maintain the full pressure of water due to the head when wheel is running.

Doubling the diameter of pipes increases their circumference in the same ratio. But doubling the diameter increases their capacity for supply four-fold, since pipes are to each other as the squares of their diameters.

Wheels on Horizontal Shafts and Draft Tubes.



Much has been said and written of late relative to wheels running on horizontal shafts and draft tubes. As has been explained, water exerts an equal pressure in all directions, consequently it makes little difference whether the wheel is arranged to run horizontally or vertically, the pressure of water on the wheel is the same. But to place a wheel on a horizontal shaft, it becomes necessary to place it a sufficient distance or height above the tail water to keep dampness away from the driving pulleys. Consequently,

in all cases where horizontal wheels are used, it becomes necessary to use draft tubes.

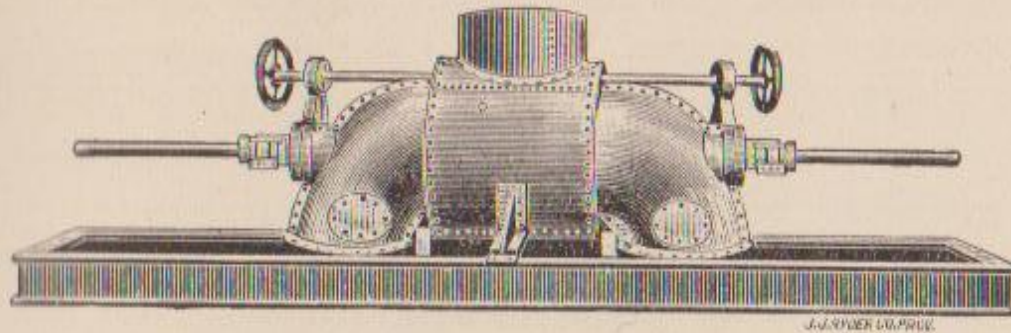
Many theories have been advanced relative to draft tubes, and most people suppose there must be a loss in placing a wheel at any distance above the water in the tail race, and some say the draft tube, if used at all, should be small, so the water will pass through under great velocity, and thereby help to keep the wheel in motion, while others theorize that they should be made large so as not to absorb power by friction of water on the sides and thereby cause back water on the wheel. Theory would show that draft tubes should be of the same capacity as the feed pipe. But as a matter of fact they can be made somewhat smaller, as in almost all cases the draft tube is placed in a vertical direction, and very little friction of water on the sides of the tube causes less resistance of flow than in the usual feed pipe for a wheel. Draft tubes are in principle the same as the feed pipe to a pump and exert their force by the removal of the atmospheric pressure. They fill up with water when the wheel is running, and the weight of water

contained in the draft tubes pulls down from under the wheel with the same force due to the same quantity of water if it were placed above the wheel and pressing down from above.

When a vacuum is formed in a suction pipe of a pump, the pressure of the external air forces the water from the well up the pipe, provided the lift is not too great. The weight of the column of water in the suction pipe rests or draws upon the valve of the pump with the same force due to a column of water of the same depth if it were placed above the pump. However, the power of water used in draft is limited. Theoretically, water can be lifted by suction to a height of 34 feet; but in practice not more than from 25 to 30 feet. Consequently we advise using draft tubes of moderate length or depth.

While we have used draft tubes of 23 feet in length with apparently good results, it is thought best in ordinary cases to limit the depth of them to not more than 10 or 12 feet, while in special cases they may be made longer. The usefulness of a draft tube depends *entirely* upon its construction, and in all cases it must be made *perfectly air tight*. We make our own draft tubes and tubing, and on all jobs where we make them and do the fitting we will guarantee as good results as it is possible to obtain by placing wheels at the bottom of the tail race. Relative to wheels placed on horizontal shafts, we guarantee them as efficient in every particular as wheels placed on vertical shafts. They also have many advantages over the vertical wheel, dispensing with gearing or quarter turn belts, which is a great advantage. The power can also be more concentrated by placing two wheels on one shaft when large power is wanted from a given space. Pulleys may be placed upon one or both ends of the shaft to drive the same or different lines; also, the wheels may be placed so as to be run independently of each other to drive different lines. They are also more accessible than wheels on vertical shafts, as the step adjustments are above the water and always accessible, and adjustments can be made when necessary with very little trouble.

Two Wheels on Horizontal Shaft.

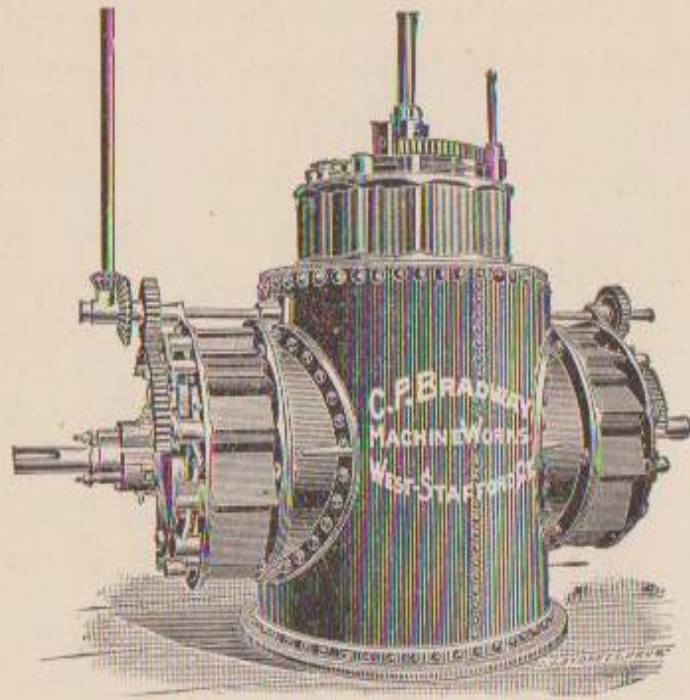


One of the most popular forms of setting is the placing of two wheels on a horizontal shaft, using two separate draft tubes. This form of setting has some advantages over other forms of setting. The wheels may be connected together and run as a single wheel, or they may run independently of each other; also

wheels of different size can be placed in the same flume. By using two draft tubes the water is distributed over more surface in the tail race, thereby preventing loss of head, which results from discharging too much water at one place. We make a special end box for all horizontal wheels, which holds the wheels in their proper position, and are capable of adjustment to a nice degree. They hold a large quantity of oil and are very useful as an end box. All the bearings are self-lubricating and adjustable.



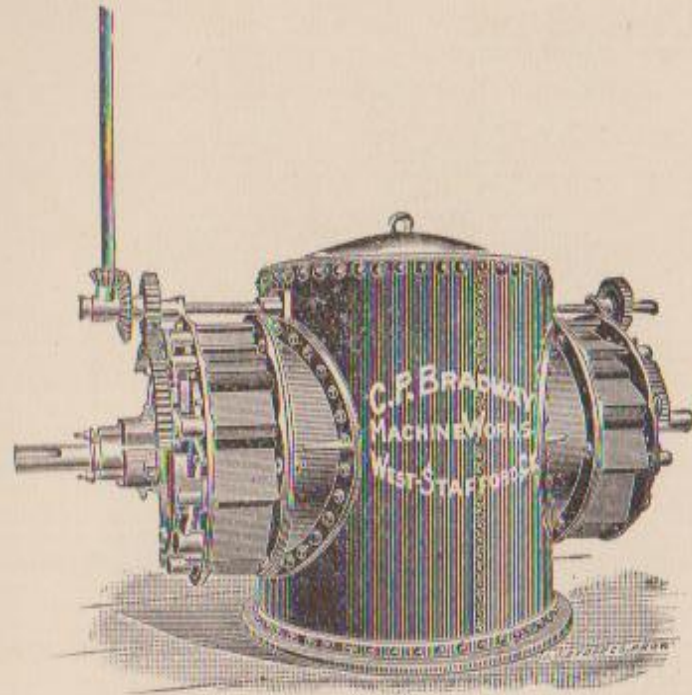
Three Wheels on One Base.



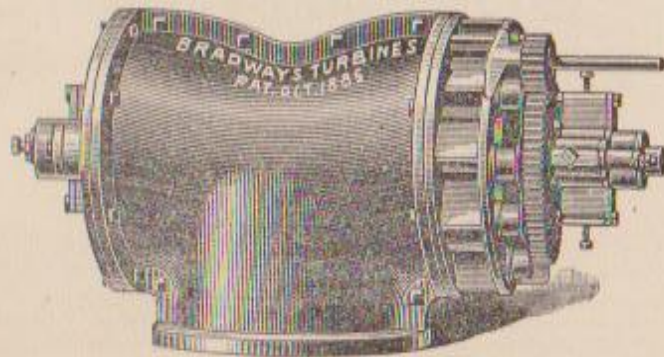
This plan of placing wheels originated with Mr. Bradway, and is useful when a large amount of power is desired from a limited space. This plan consists of a pair of twin wheels on a horizontal shaft and a single wheel on a vertical shaft, all discharging into the same draft tube. It is always well for parties contemplating wheels to write as near as possible all the particulars of their water power, and even mentioning small matters seemingly of no importance often help us in arriving at a conclusion of what would be the best size and style of wheel for the place.



Central Draft Wheels.

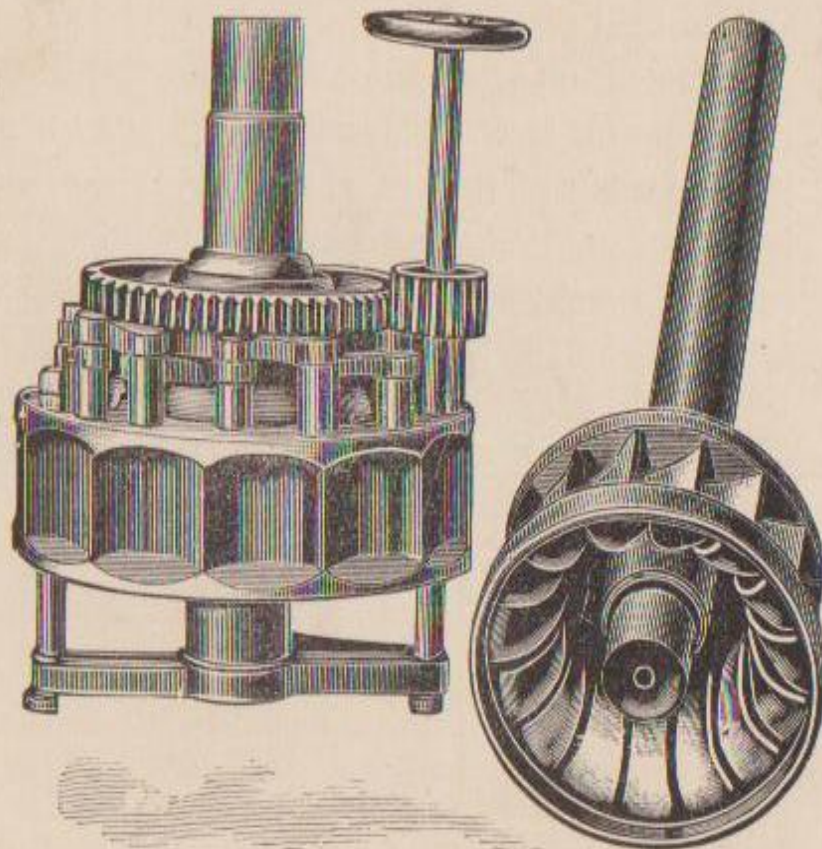


This form of setting wheel is very convenient in many places, as one or two wheels may be placed on a horizontal shaft. This form of wheel may also be constructed to use either one or both, at the option of the operator, as the gates can be arranged to work independently of each other. They may be set either in a wood or iron penstock, and sometimes replace vertical wheels, being placed in the same penstock without much if any change. All the bearings are adjustable and self-lubricating and require no attention for months at a time. Should the wheel wear to a bind it can be quickly adjusted by the adjusting screws provided for the purpose.



This cut shows another form of base used in a central draft wheel. Either one or two wheels may be used on this style. On the lower flange is connected the draft tube, which may be of greater or less length, according to circumstances. The adjustable boxes can be plainly seen on this cut, as also the adjustable step at opposite end from the wheel. Another wheel can be used in the place of this step.

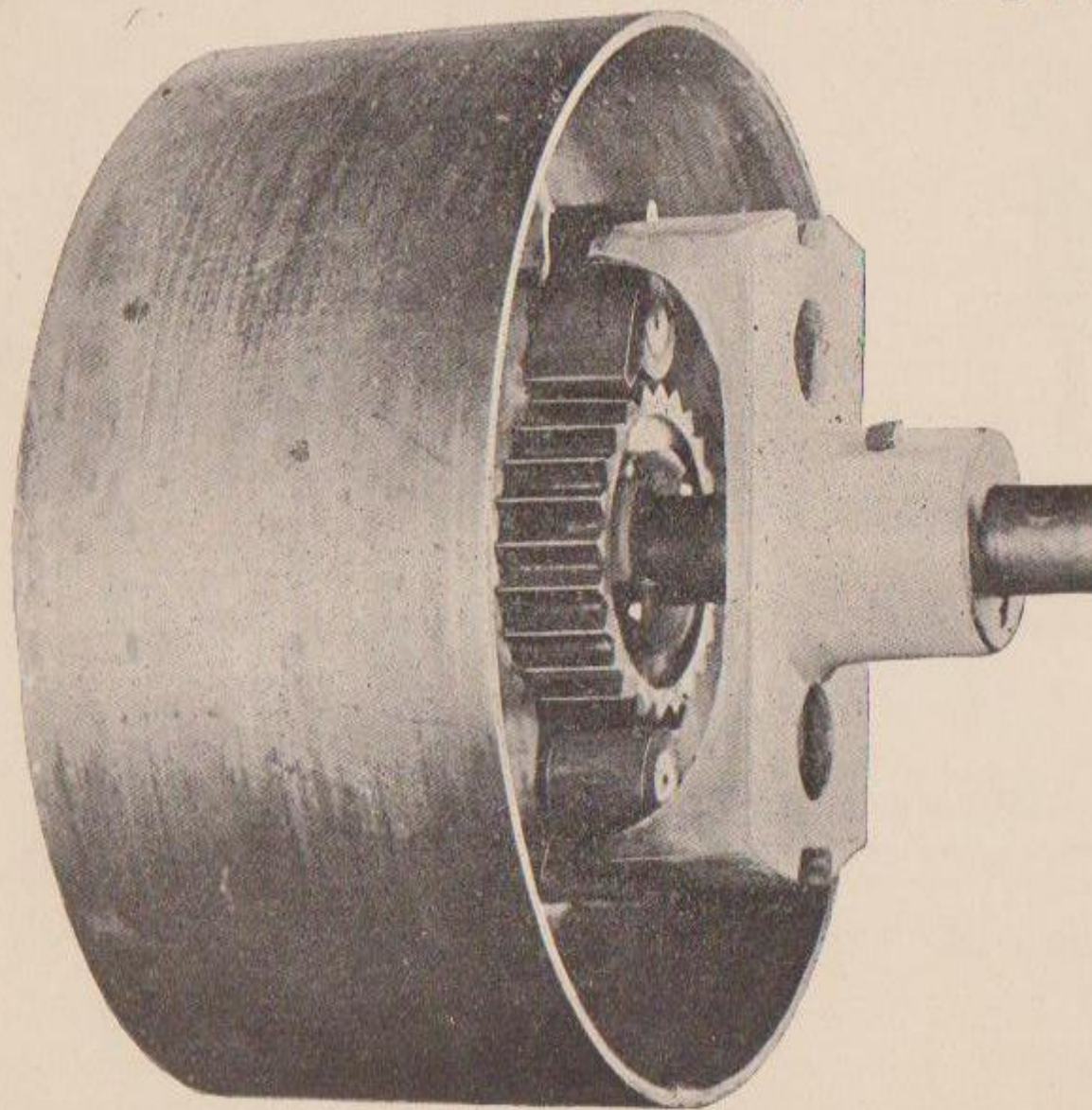
Wheels on Vertical Shaft.



This cut shows the Bradway Vertical Wheel and Wheel Casing, and position of the gates. This does not show the adjustable box now used at the top of wheel casing. All of the Bradway wheels are built alike and may be used either to run on vertical shafts or horizontal. But no cross-bar is needed on horizontal wheels and the shaft connections must be different.

the same gate system applies to both kinds of wheels.

Bradway's Automatic Clutch Pulley--A Long-felt Want Supplied at Last

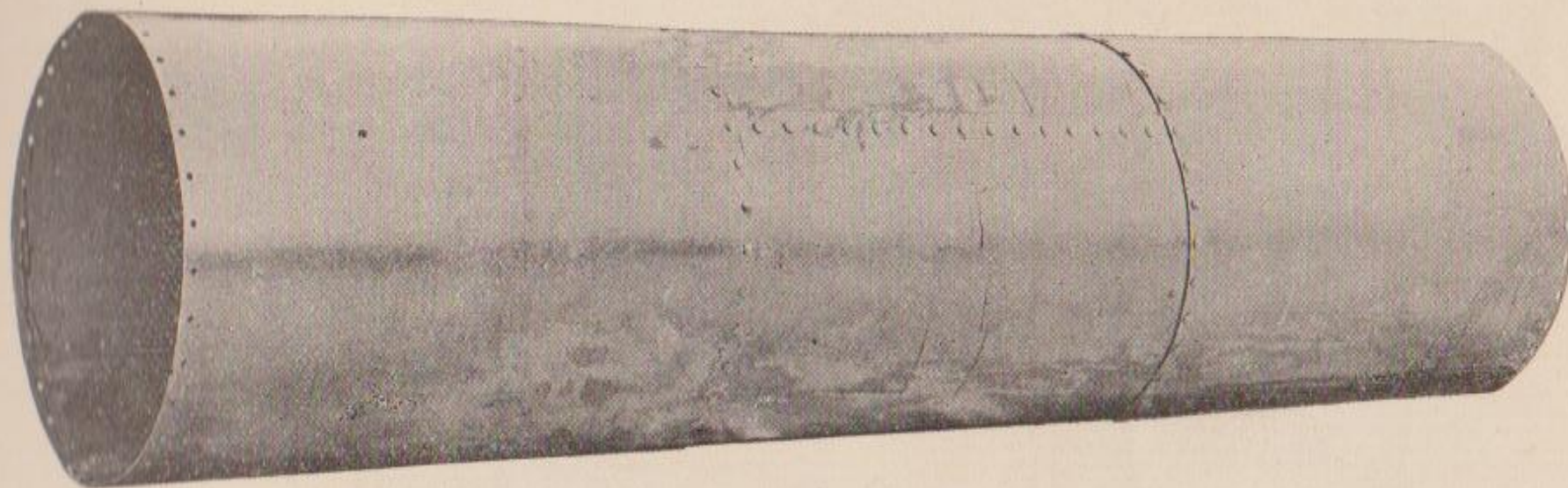


A vast amount of annoyance and expense has been occasioned when running Turbines in connection with a steam engine, and various devices have been planned for throwing off the one or the other, and many waterwheel steps have been burned out from neglect to throw off the wheel when running by steam. This clutch is automatic in its action, and the wheel cannot be run by the engine. Neither can the engine be run by the wheel, although both may be belted to the same shaft. Either the wheel or engine may drive the whole load or both will drive together. But the moment the power is shut off from either the clutch throws out and the full load is driven by the remaining power. Write for price.

C. P. BRADWAY MACHINE WORKS, WEST STAFFORD, CT.

21

Steel Tubing.



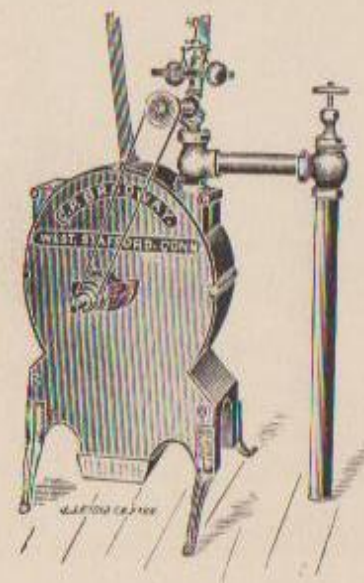
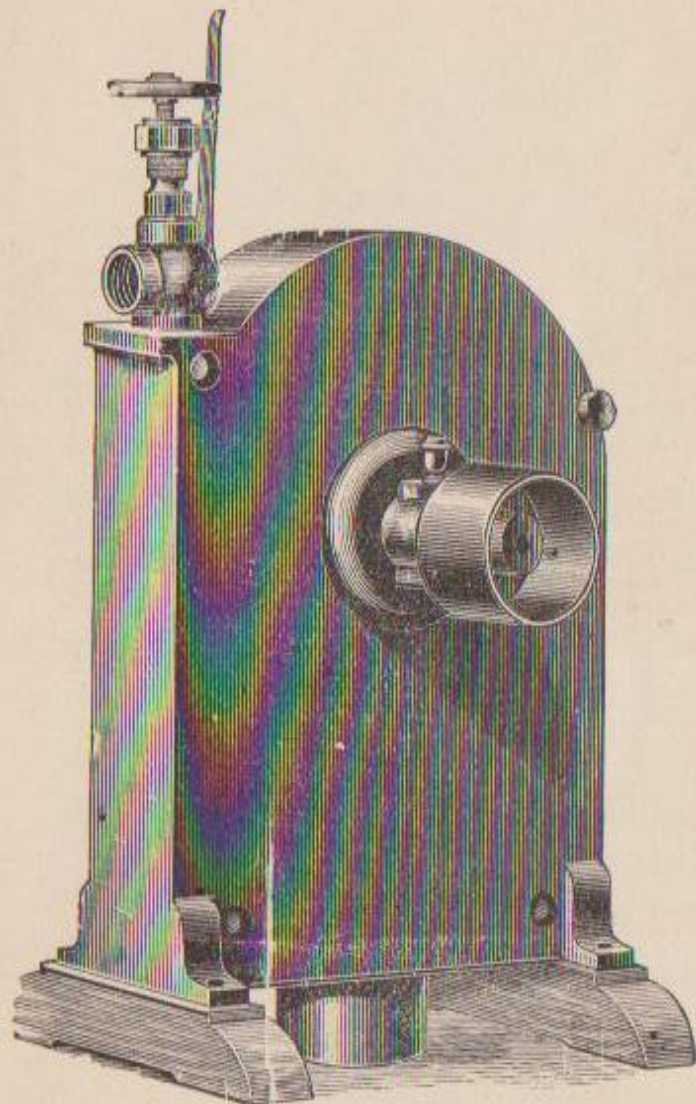
We are ready at all times to make an estimate and contract to build steel tubing of any size and quantity, either at our works in West Stafford, or on large jobs we ship tools and make up on the grounds where wanted. Correspondence solicited.



C. P. BRADWAY MACHINE WORKS, WEST STAFFORD, CT.

Bradway's Water Motor.

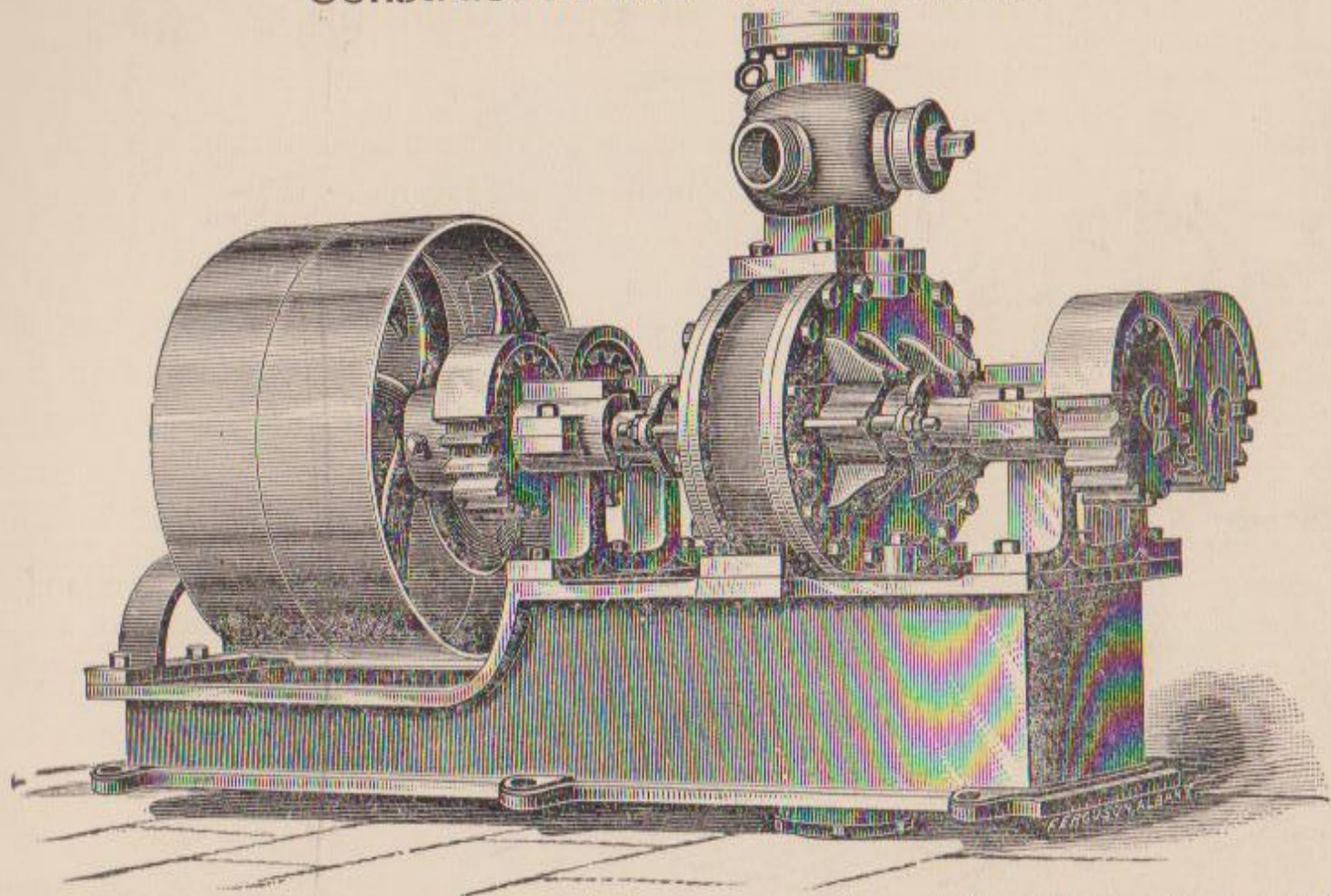
Simple in construction. Water adjusted directly at the point of contact. On variable work will run with from one-half to one-third less water than other water motors. Replacing other motors with much less expense for water service.



Bradway's Water Motor with regulator will run at a uniform speed to its fullest capacity.

Send for special circular for Water Motors.

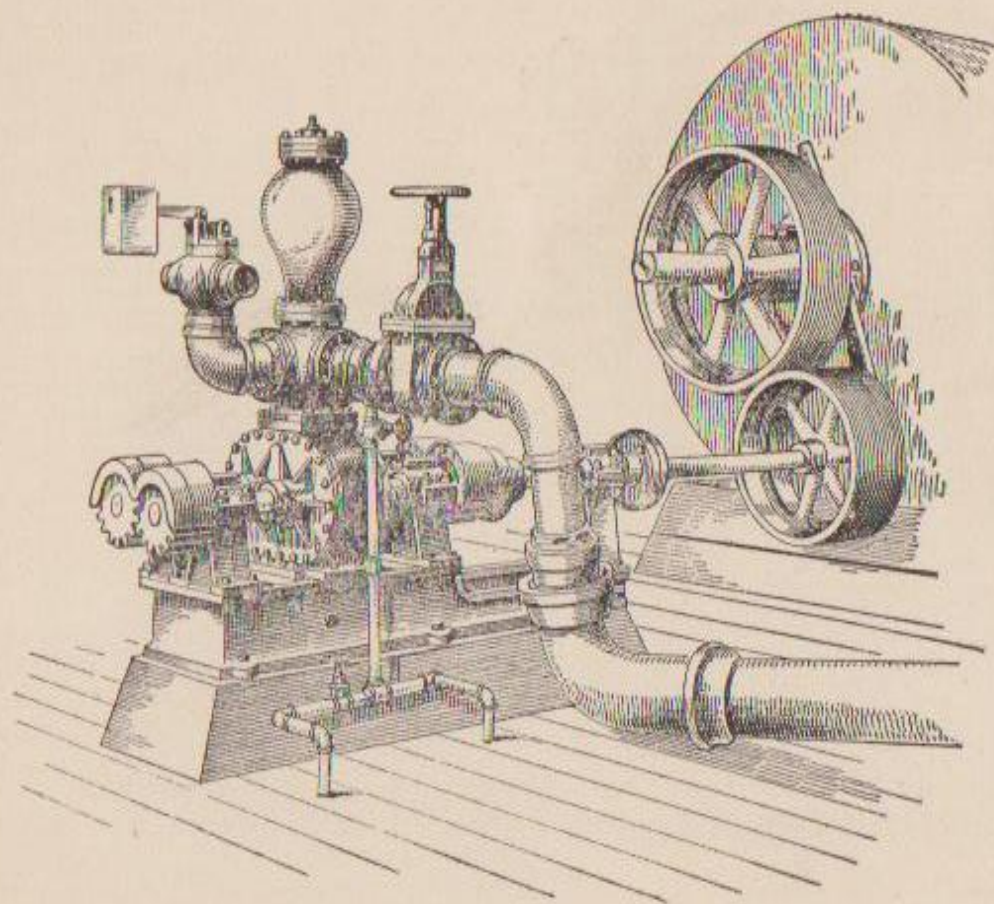
Power Pumps and Underwriters' Pumps of the Most Approved
Construction and Workmanship.



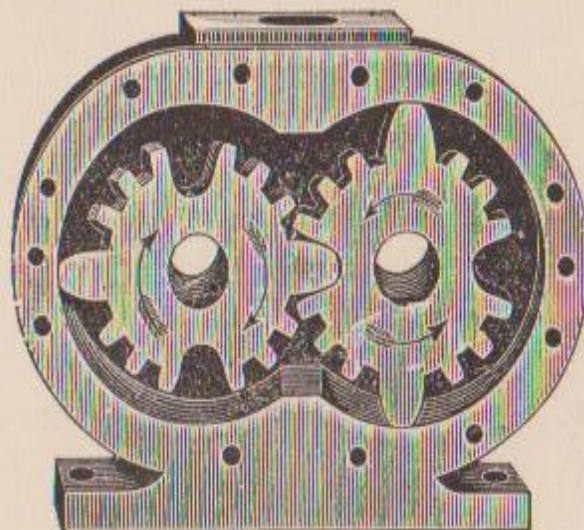
The above is designed to be driven by belt, is compact and portable, self-contained, can be placed in any position where belt connections can be made.

C. P. BRADWAY MACHINE WORKS, WEST STAFFORD, CT.

Power Pumps for Fire Purposes.

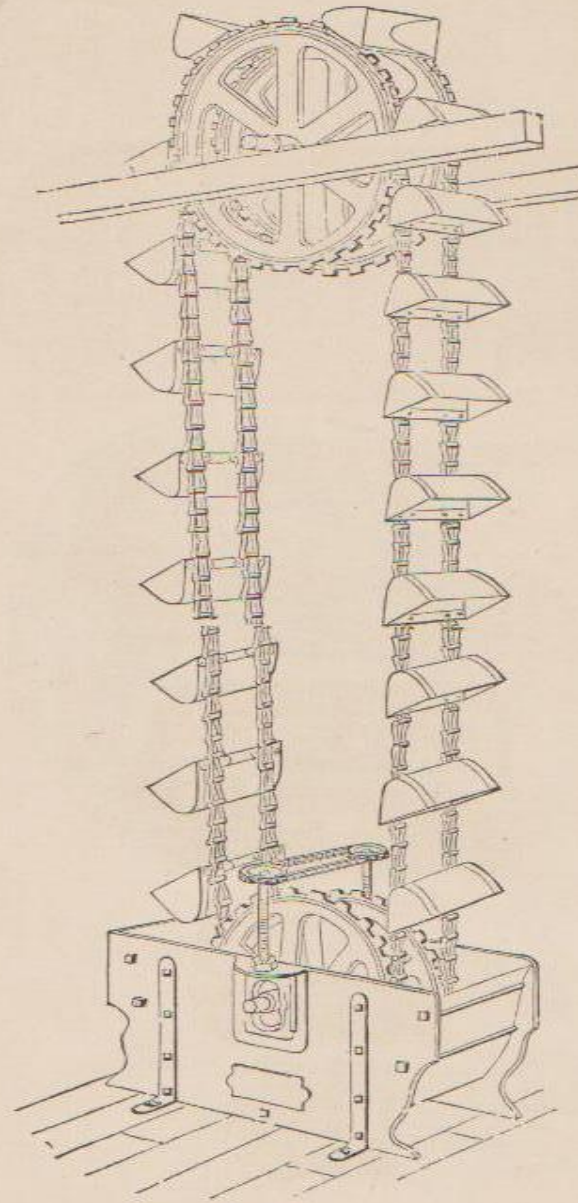


This cut shows a pump connected to a horizontal Turbine wheel by friction gears. The device for tightening or throwing together the frictions is not shown. The principle of construction and application can be seen. We can also connect this form of pump direct to the water wheel shaft by friction clutch, where the speed of the wheel is right. This is by far the best way when the speed of wheel is right.



The above cut shows the working parts of the pump. Correspondence solicited.





Coal Elevator.



The long experience, accompanied by the many experiments of Mr. C. P. Bradway, enables him to manufacture wheels not only of the perfected type of the Bradway wheel, strictly first-class in every particular, but also to build cheaper forms of wheels where the Perfected Bradway wheel would seem to be too expensive. Having had 36 years experience in waterwheel manufacture and experiments, during which time almost every conceivable plan for a water wheel has been considered and tried, I am now enabled to build a cheap wheel when wanted, which will work well and is warranted to give satisfaction, and to any party who is in want of a wheel who does not wish to pay the price for a strictly first-class wheel, we shall be pleased to give a description and price for a wheel to suit the conditions required. There is almost no limit to the cheapness of a water wheel in the simple forms; so please state your requirements and we will give you our best attention.

In concluding this circular, testimonials have been purposely omitted. Most business men are too busy to read over a lot of testimonials from parties they know nothing of. To any one who may be in doubt about the superior qualities of the C. P. Bradway Turbine, please write and we will cheerfully refer you to some parties who are users—to men of high principles and business ability, some of whom are among the best mechanics of this or any other country. Thanking my patrons for past favors and soliciting your further patronage, I remain,

Yours truly,

C. P. BRADWAY.

TABLES
OF
**POWER, CUBIC FEET AT FULL GATE AND
REVOLUTIONS PER MINUTE.**

12-inch Wheel.				15-inch Wheel, 3-inch Bucket.			
Price, . . \$150.				Price, . . \$166.50.			
Head in feet.	H. P.	Cubic ft.	Speed	Head in feet.	H. P.	Cubic ft.	Speed
6	1.00	130	254	6	2.16	225	209
7	1.25	137	278	7	2.72	245	223
8	1.60	145	301	8	3.32	254	245
9	2.00	152	323	9	3.96	280	258
10	2.60	160	342	10	4.65	290	273
11	3.00	168	360	11	5.40	305	285
12	3.50	175	376	12	6.12	315	297
13	4.00	190	394	13	6.90	325	310
14	4.50	198	410	14	7.70	340	321
15	4.80	205	426	15	8.55	350	333
16	5.20	212	441	16	9.40	365	344
17	5.75	218	455	17	10.28	375	354
18	6.50	225	469	18	11.22	382	365
19	7.00	230	488	19	12.23	390	377
20	7.50	235	496	20	13.16	400	385
21	8.25	242	509	21	14.12	410	394
22	8.56	245	522	22	15.18	420	403
23	8.79	250	534	23	16.07	430	412
24	9.50	256	546	24	17.26	442	421
25	10.00	262	558	25	18.36	454	430
26	11.20	268	572	26	19.44	465	444
28	11.75	272	581	27	20.60	475	455
30	12.50	280	590	28	21.74	484	463
				29	22.90	492	472
				30	24.12	508	485

**15-inch Wheel, 5-inch
Bucket.**
Price. . . \$187.50.

Head in feet.	H. P.	Cubic ft.	Speed
6	3.60	316	209
7	4.53	345	228
8	5.38	360	243
9	6.60	379	258
10	7.75	402	273
11	9.00	421	285
12	10.20	437	297
13	11.50	451	310
14	12.83	463	321
15	14.25	484	333
16	15.65	497	344
17	17.13	509	354
18	18.80	524	365
19	20.23	537	377
20	21.93	553	385
21	23.53	564	394
22	25.30	577	403
23	26.95	589	412
24	28.76	600	421
25	30.60	613	439
26	32.40	626	447
27	33.33	637	455
28	36.23	648	463
29	38.18	660	473
30	40.20	670	485

18-inch Wheel,
Price. . . \$225.

Head in feet.	H. P.	Cubic ft.	Speed
6	5.22	540	165
7	6.60	560	176
8	8.05	605	189
9	9.62	660	201
10	10.25	702	213
11	13.00	736	226
12	14.78	770	236
13	16.69	805	246
14	18.63	838	256
15	20.74	868	266
16	22.79	895	276
17	24.94	920	285
18	27.17	956	293
19	29.40	984	301
20	31.89	1010	310
21	34.26	1038	318
22	36.79	1060	326
23	38.50	1090	334
24	41.83	1120	342
25	44.49	1136	350
26	47.18	1170	357
27	49.94	1185	365
28	53.42	1185	365
29	55.59	1208	371
30	59.00	1230	378

20-inch Wheel. Vent,
72 inches.
Price, . . \$250.

Head in feet.	H. P.	Cubic ft.	Speed
6	5.58	485	150
7	7.33	525	156
8	9.00	575	168
9	10.70	625	180
10	12.50	660	192
11	14.42	700	204
12	16.45	750	216
13	18.54	785	227
14	20.71	800	236
15	22.98	850	245
16	25.31	900	250
17	28.00	950	257
18	30.19	975	269
19	32.76	1020	277
20	35.40	1035	284
21	38.08	1068	290
22	40.82	1075	298
23	42.80	1100	305
24	46.48	1120	311
25	49.20	1145	315
26	52.64	1170	321
27	55.49	1200	3 6
28	58.60	1210	330
29	61.77	1220	334
30	65.00	1232	342

24-inch Wheel
Price, . . \$300.

Head in feet.	H. P.	Cubic ft.	Speed
6	6.69	600	124
7	8.80	650	130
8	10.74	700	140
9	12.84	750	150
10	15.01	800	160
11	17.30	850	170
12	19.73	900	180
13	22.25	950	189
14	24.85	1000	195
15	27.57	1060	204
16	30.38	1120	208
17	33.26	1160	214
18	36.23	1210	224
19	39.21	1250	231
20	42.48	1290	237
21	45.68	1330	242
22	48.98	1375	248
23	51.34	1418	254
24	55.78	1460	259
25	59.33	1500	262
26	62.92	1530	268
27	66.59	1565	272
28	70.30	1583	275
29	74.12	1600	279
30	88.00	1633	285

27-inch Wheel.
Price, . . \$350.

Head in feet.	H. P.	Cubic ft.	Speed
6	9.80	1080	111
7	12.36	1005	116
8	15.10	1080	124
9	18.02	1150	133
10	21.12	1220	142
11	24.36	1295	151
12	27.64	1350	159
13	31.28	1420	167
14	34.98	1475	175
15	38.78	1530	181
16	42.60	1580	186
17	46.80	1635	192
18	50.98	1689	199
19	55.28	1735	205
20	59.72	1785	210
21	64.24	1832	215
22	68.88	1875	220
23	73.62	1920	225
24	78.48	1960	230
25	83.48	2000	235
26	88.50	2040	240
27	93.66	2080	245
28	98.78	2120	250
29	104.24	2160	255
30	109.62	2200	259

30-inch Wheel.
Price, . . \$375.

Head in feet.	H. P.	Cubic ft.	Speed
6	11.10	1185	98
7	14.50	1290	104
8	18.00	1380	110
9	21.23	1450	120
10	24.80	1530	127
11	28.60	1600	133
12	32.65	1680	140
13	36.83	1745	148
14	41.14	1810	154
15	45.63	1870	160
16	50.29	1930	166
17	55.06	2000	170
18	60.00	2060	175
19	65.05	2120	180
20	70.31	2168	186
21	75.60	2220	190
22	81.06	2270	194
23	85.00	2320	200
24	92.32	2370	204
25	98.22	2420	209
26	104.10	2470	214
27	110.22	2518	219
28	116.36	2567	223
29	122.69	2610	228
30	129.00	2650	232

**36-inch Wheel, 12-inch
Bucket.**
Price, . . \$400.

Head in feet.	H. P.	Cubic ft.	Speed
6	15.40	1760	80
7	20.23	1895	85
8	24.70	2010	90
9	29.49	2120	100
10	34.49	2210	105
11	39.77	2315	110
12	45.35	2400	115
13	51.15	2480	120
14	57.13	2500	125
15	62.23	2540	130
16	69.89	2600	135
17	76.45	2690	140
18	83.21	2680	145
19	90.36	2830	150
20	97.62	2900	155
21	102.71	3200	160
22	112.59	3090	164
23	118.00	3100	168
24	128.23	3200	172
25	135.24	3300	176
26	144.60	3400	180
27	153.08	3500	184
28	161.70	3600	187
29	170.39	3700	190
30	179.31	3780	193

36-inch Standard.
Price, . . \$450.

Head in feet.	H. P.	Cubic ft.	Speed
6	17.68	1700	80
7	23.39	1900	85
8	32.90	2000	90
9	40.00	2300	95
10	45.73	2400	100
11	51.00	2500	106
12	58.00	2600	110
13	66.84	2700	115
14	72.89	2800	121
15	80.31	2900	128
16	89.09	3000	135
17	95.78	3150	140
18	103.92	3250	145
19	112.30	3425	150
20	120.75	3550	155
21	129.49	3590	160
22	135.94	3640	164
23	147.46	3720	168
24	156.87	3800	172
25	166.54	3890	176
26	176.03	3980	179
27	185.85	4090	182
28	195.95	4150	186
29	205.00	4240	189
30	210.00	4330	193

36-inch Special
Price, . . . \$500.

Head
in feet. H. P. Cubic ft. Speed

4	11.65	1800	68
5	17.09	2000	74
6	23.07	2250	80
7	30.34	2474	85
8	37.03	2650	90
9	45.30	2800	95
10	51.72	3000	102
11	59.70	3200	109
12	68.03	3300	116
13	76.72	3420	123
14	85.69	3550	129
15	95.06	3650	133
16	104.75	3790	138
17	114.69	3900	143
18	124.92	4050	147
19	135.55	4150	151
20	143.02	4250	156
21	157.50	4375	164
22	168.90	4450	168
23	177.03	4550	172
24	192.34	4625	176
25	204.58	4700	180

42-inch Wheel.
Price, . . . \$525.

Head
in feet. H. P. Cubic ft. Speed

4	15.00	2370	64
5	20.00	2527	69
6	26.00	2738	72
7	34.22	3000	77
8	41.03	3230	83
9	50.00	3484	88
10	58.36	3700	94
11	67.20	3848	100
12	76.70	4000	104
13	87.91	4230	110
14	97.33	4308	114
15	105.90	4400	119
16	118.20	4650	124
17	129.34	4880	127
18	140.88	4950	130
19	152.87	5060	135
20	165.20	5215	140
21	177.60	5333	144
22	190.40	5460	147
23	201.90	5550	150
24	210.92	5790	154
25	230.75	6010	157

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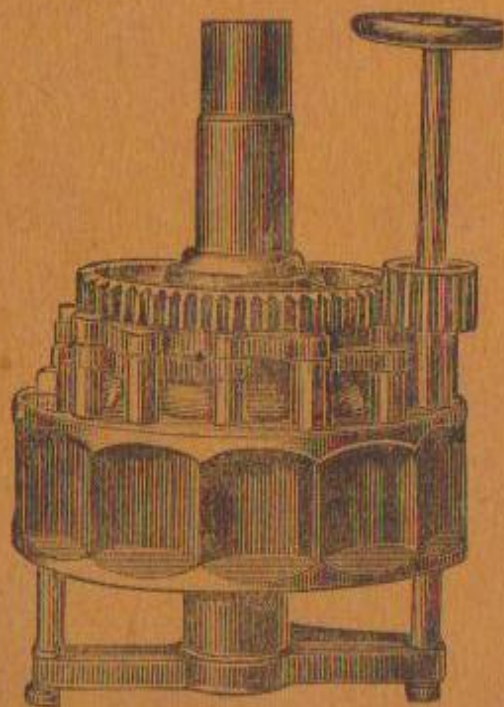
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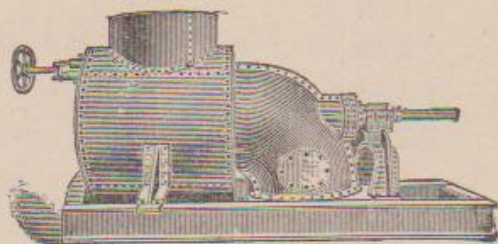
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Excels all others in efficiency



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Turbines, from a four inch to a four foot in diameter.

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West Stafford,

Conn.

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The table on page 2 of this circular illustrates what an Eight Inch Special Wheel will do, which is expressly manufactured for electrical purposes. These wheels can be applied to almost any stream, when stream is properly arranged to obtain the fall of water. It will give power enough to light your home and out-buildings, saw your wood, and do other work on your farm or residence, at a very low rate of maintenance.

I will give you what information that you may require, that is necessary as to the installing, the advisability of installing, what power can be obtained from the service, how to install, what it will do, and what it will cost.

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**C. P. BRADWAY
MACHINE WORKS**

West Stafford, Conn.

Tables Eight Inch Special Bradway Water Wheel

Head in feet.	H. P.	Cu. feet of water.	Speed
6	1.20	156	373
7	1.55	164	408
8	1.92	174	440
9	2.04	182	474
10	3.14	192	502
11	3.60	202	528
12	4.02	210	552
13	4.80	228	578
14	5.04	232	602
15	5.76	241	625
16	6.24	254	645
17	6.90	261	668
18	7.81	270	688
19	8.40	276	716
20	8.91	282	727
21	9.40	290	745
22	9.80	295	765
23	10.06	300	784
24	11.04	307	800
25	12.00	314	818
26	13.04	320	831
27	13.74	324	840
28	14.10	326	852
29	15.00	330	858
30	16.00	335	864

48-inch Wheel.
Price, . . . \$600.

Head in feet.	H.	P.	Cubic ft.	Speed
3	18		2400	40
4	25		2700	48
5	32		3000	54
6	38		3333	62
7	48		3611	65
8	59		3866	70
9	71		4174	75
10	83		4444	80
11	96		4722	85
12	109		5000	90
13	123		5280	94
14	138		5555	97
15	153		5800	102
16	167		6122	104
17	184		6444	107
18	200		6722	112
19	218		6944	115
20	236		7166	118
21	256		7400	121
22	269		7640	124
23	285		7877	127
24	309		8111	129
25	329		8333	131

48-inch Special.
Price, . . . \$650.

Head in feet.	H.	P.	Cubic ft.	Speed
3	21		2980	40
4	30		3240	48
5	39		3600	54
6	45		3999	62
7	56		4333	65
8	70		4639	70
9	86		5008	75
10	100		5666	80
11	115		6000	85
12	130		6336	90
13	147		6666	94
14	165		6960	97
15	183		7346	102
16	200		7632	104
17	220		8066	107
18	240		8333	112
19	261		8599	115
20	283		8880	118
21	307		9168	121
22	328		9452	124
23	342		9733	127
24	370		9999	129
25	394			131